Goal: to use our current understanding of the Earth, its lifeforms, and its location, to draw conclusions about the biological capacity of the universe; to observe to what extent this capacity is realized. No background in astronomy is required. Student reasoning and research abilities are expected to be at the 400-level.

Instructor: Dr. Michael L Allen
Office: Webster 1246 Credits: 3
Lab: Webster 249 Level: Tier III [T,P]
Email: mlfa@wsu.edu Prereq’s: GER [N], junior standing; Rec GER [B,P]
Office Hours: by appt Web Page: http://astro.wsu.edu/allen/courses/astr450/
Bulletin Board: opposite Webster 16 (level G)

2. *Life in the Solar System and Beyond*, by Jones (optional)
3. *The Search for Life in the Universe*, by Owen & Goldsmith (optional)
4. *Planets & Life*, eds. Sullivan & Baross (optional; graduate level)
5. Other items are available on reserve at the Owen Library

Meeting Places: Regular Lectures M-F 10:30 - 11:45 am, in CUE 407
Planetarium Sloan Hall 231
Observatory on Olympia Ave, near the racetrack and greenhouses, south-east end of campus

Important Dates: Memorial Day (holiday) Mon May 30, 2011


Course webpages: The web pages have all the information needed by the student, including sections for announcements, grading, example quiz questions, highlights of the in-class notes, and some diagrams. It is advised that the student preview the in-class notes before coming to the lecture.

Classroom Etiquette:

1. The course is conducted mostly by lecture format. There will be in-class learning exercises that will not be graded. You are advised to take advantage of them.

2. Cell phones are a blight upon the land. I want neither to hear nor see them. For every cell phone that rings you will be assigned a 5,000 word essay on a special topic dealing with the radio portion of the electromagnetic spectrum; passing the class will be contingent upon the essay’s completion.

3. Please show courtesy to your fellow classmates and do not chat unnecessarily during the lecture. Being disruptive in class is grounds for expulsion from the course.

Evaluation

Encyclopedia (whole class): 20% a bound, written compilation due Friday June 24, i.e., one week after the termination of the first 6-week summer session

Individual entries (small groups): 20% each encyclopedic entry is graded individually

Seminars (small group): 20% a verbal plus written progress report on your portfolio every Friday

Weekly quizzes (individual): 20% towards the end of every Friday class

Peer review (individual): 20% you will compare your knowledge, skills, and work ethic with others that you worked with

Your grade is based entirely upon your ability to communicate in writing an understanding of the course material. Details on the portfolio will be available from the instructor.
Grading: details are given in the portfolio assignment sheet. The descriptive anchors for grades is from Academic Rule 90:

A. Student work demonstrates consistently excellent scholastic performance; thorough comprehension; ability to correlate the material with other ideas, to communicate and to deal effectively with course concepts and new material; reliability in attendance and attention to assignments.

B. Student work demonstrates superior scholastic performance overall, reliability in attendance, and attention to assignments; may demonstrate excellence but be less consistent than the work of an A student.

C. Student work demonstrates satisfactory performance overall, as well as reliability in attendance, and attention to assignments.

D. Student work demonstrates minimal, barely passing performance overall; limited knowledge of subject matter.

F. Student work demonstrates unsatisfactory performance and comprehension or unfulfilled requirements. The grade is failing.

Extra credit: Extra credit will be granted for participation in evening planetarium shows (dates announced in class) and outdoor observing at the Jewett Observatory (http://astro.wsu.eduobservatory.html) or elsewhere, hosted by the Palouse Astronomical Society (http://www.palouseastro.wsu.edu).

Observing dates: Sat May 14 observing begins at dusk
Sat Jun 11 (cancelled if cloudy)

List of possible topics:

1. Cosmology: origin and evolution of the universe; origin of the elements; origin of structure
2. Stars: formation, evolution, and death of stars; stellar lifetimes; element production in stars; stars as sources of energy for life; habitable zones
3. Planets: formation; organization; terrestrial planets as hosts of life; giant planets as hosts for life; sources of energy for life not associated with stars; planets around other stars; alternate formation scenarios for extrasolar planets
4. Life: definition; formation and evolution on Earth; the molecule as the basis for life; carbon-based versus other forms of life; life in extreme environments
5. Search for extraterrestrials: the definition of intelligence; radio SETI; other SETI projects; current search strategies and results; SETI@home project
6. Speculative topics: types of ET civilizations; anthropic reasoning; Fermi paradox; Drake’s equation

Other Open Astronomy Courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASTR 135</td>
<td>Descriptive Astronomy</td>
<td>Survey course of planets, stars, galaxies</td>
</tr>
<tr>
<td>ASTR 138</td>
<td>Planets and Planetary Systems</td>
<td>Survey of solar system astronomy</td>
</tr>
<tr>
<td>ASTR 150</td>
<td>Science and the Universe</td>
<td>Survey of the history of astronomy</td>
</tr>
<tr>
<td>PHYS 188</td>
<td>Freshman Seminar</td>
<td>Intro to faculty &amp; their research</td>
</tr>
<tr>
<td>ASTR 390</td>
<td>The Night Sky</td>
<td>Hands-on observing; 1-credit GER [P] lab</td>
</tr>
</tbody>
</table>

Academic Integrity: “Academic dishonesty” is any time you represent someone else’s work as your own. All forms of cheating, plagiarism, and fabrication, are prohibited as stated in the WSU Handbook (WAC 504-25-015). See http://www.conduct.wsu.edu for a discussion. In particular: (i) quotations are prohibited, the student must paraphrase all written information, (ii) lack of citation to any consulted material is prohibited, (iii) unauthorized collaboration with another student on graded material is prohibited, (iv) submission of material from another class is prohibited.

The policy of the Department of Physics & Astronomy is that students who violate the Washington Academic Code (WAC) receive zero credit for the work in question for a first offense, and are failed in the course for subsequent offenses; in all cases a formal report is sent to the Office of Student Conduct.

Students with Disabilities: Reasonable accommodations are available for students who have a documented disability. Please visit the Disability Resource Center (DRC) during the first two weeks of every semester to seek information or to qualify for accommodations. All accommodations must be approved through the DRC, located in Washington Bldg 217, 509-335-3417 in Pullman, or http://www.drc.wsu.edu/.

WAC policies on final exams: (1) No final exams will be given at a different time than posted, except (2) an exam date may be changed if a student has 3 or more exams on a single day. (3) No exams shall be given during Dead Week, except make-up exams.

Strategies for success: Look up any word you do not understand in a good dictionary. Re-write your notes in your own words. Form a weekly study group that can meet for 30-60 minutes. Get an early start on assignments. Make good use of instructor office hours by arriving with a written list of questions. Mental and physical health go hand in hand: eat right, stay active, stop watching TV. Maintain an academic mindset: question everything, be not content with your knowledge.